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A careful examination of these observations shows that probably this is a case of slow angular motion, with very little change in the distance. The motion is retrograde, and the distance cannot have been at any time much less than 0″·3. An annual motion of about 1°·5 in position-angle will represent the observations as well as could be expected in a pair of this kind. My measures in 1881 were made with the 15½-inch refractor of the Washburn Observatory, with which this pair was well seen. The last measures were made here with the 36-inch. With the larger telescope, of course, such a pair is very easy under any suitable conditions, and the observations should represent the relations of the components very accurately. The two stars are sensibly equal in magnitude, but there is hardly any doubt about the quadrant, because the angular change between 1832 and 1841, and between 1881 and 1892, would seem to show that there could not have been an occultation during the intervening time when it was not seen double, nor any considerable diminution in the distance. Evidently this is not so interesting a binary as heretofore supposed, since the angular motion in sixty years is only about 90°.

The place of this star (1880) is:—

R. A. $12^h\ 0^m\ 0^s$ }
Decl. $+69°\ 22'$ }

It is desirable that this pair should be carefully measured every few years.

Mount Hamilton:
March 10.

A New Binary Star, β 581. By S. W. Burnham.

This fine triple star was discovered in 1878 with the 18½-inch refractor of the Dearborn Observatory. As the close pair was 0″·4 in distance, it was readily measurable with that instrument, and with a moderately close third star it was an interesting object on the telescope, visually at least. About the same time it was measured by Dembowski, and a few years later by Engelmann, so that we have good positions for the components at that time. I have recently looked it up, and made a set of measures with the 36-inch refractor of this observatory. Since these last measures were made I have received from Schiaparelli two sets of measures which fill an important place in the intervening period.

The following are all the measures of both components to this time:—

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A and B.

1878·15	176°·9	0″·40	8·0	. . .	8·0	β 2_n
1878·22	180·3	0·40	8·7	. . .	8·7	Δ 1_n
1883·37	205·2	0·30		. . .		En 5_n
1889·23	249·8	0·4		. . .		Sp 4_n
1890·21	253·7	0·5		. . .		Sp 4_n
1891·97	259·4	0·46	8·5	. . .	8·6	β 4_n

A B and C.

1878·13	185°·3	4″·76	. . .	10·5	β 3_n
1878·22	184·3	4·76	. . .	11·0	Δ 1_n
1891·97	192·7	4·60	. . .	11·5	β 4_n

Some of the angles of the close pair are reversed, but I have placed them all on the same side, since this gives nearly uniform motion during the whole time. As there is no material change in the distance, there can be no doubt that this is the proper disposition of the angles, making the total motion during this time 82° instead of 262°. The components are so nearly equal that the 36-inch shows but little difference in magnitude.

There is a remarkable similarity between this triple system and that of ζ *Cancri*. The close pair of the latter has a period of about 58 years. In this star the motion of AB since 1878 has been at the rate of 6° per year. On the assumption of uniform motion, this would give almost exactly the same periodic time. The third star, C, is about the same distance from AB in each case. In ζ *Cancri* the annual motion is about half a degree in a retrograde direction; while in β 581 the movement is direct, and about the same in amount. Of course, the latter is a much more difficult triple than ζ *Cancri*, and will require a much larger aperture.

This star is Lalande 15743, and the place (1880) is:—

$$\left.\begin{array}{l}\text{R.A. } 7^{h}\ 57^{m}\ 44^{s}\\ \text{Decl.} + 12^{\circ}\ 38'\end{array}\right\}$$

The triple, β 582, is 22^s following, and 13′ *s*. As a wide pair (20″) this is Σ 1179. On the same night, when the other triple was discovered, I found that the smaller component of Struve's pair was also double. The third star is nearly 4″ from B in the direction of 57°. The distance of the wide pair has increased a little more than 2″ since the measures of Struve in 1829. This is probably due to proper motion. There has been but little, if any, change in the new star since 1878.

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Observations of Nebulæ with the 36-inch Refractor of the Lick Observatory. By S. W. Burnham.

The observations of nebulæ which follow were all made with the 36-inch equatoreal, and substantially all of them in the months of September and October, 1891. Most of the objects were selected from the General Catalogue, because of some uncertainty in the descriptions of the nebulæ, or doubt concerning their places or actual existence. These observations were dovetailed in with the regular work, so as not to interfere materially with the more important micrometer measures of close double stars; and, of course, the best nights were not used for this purpose, but the conditions were good enough for work of this character.

I have relied upon Dreyer's General Catalogue for the places and the general descriptions. The numbers used in all cases refer to this work. I have referred the places derived from the measures to 1860, the epoch of the General Catalogue. It would certainly be a great convenience to observers if the places of all newly discovered nebulæ were given in the same way. There is nothing gained by carrying the places forward to any current date. So far as setting on these objects is concerned, one time is as good as another, and since we have a general catalogue there is every reason for adhering to that epoch. For the general purposes of a catalogue approximate places are sufficient, and the nearest minute of R.A. is close enough; but it is very desirable that as many nebulæ as possible should be carefully observed with the micrometer, and measured directly (angle and distance) from some convenient star for the detection of proper motion. It is in this way only that change of this character is likely to be discovered. The R.A. and Decl. may have the highest accuracy, but there is no way of easily ascertaining whether there has been any movement. If we have the angle and distance from a star in the field, the micrometer wires can be placed in a couple of minutes so as to show whether or not it is necessary to do anything more. Of course, for this purpose, it is a matter of no consequence that the comparison star is not found in any catalogue.

In the course of these observations some new nebulæ have been found in the vicinity of the catalogue nebulæ under examination. These are referred to in the proper places. No attempt has been made to find new objects, and in my regular work with micrometer the faint nebulæ which are occasionally met with are, as a rule, only saved when they are near enough to some prominent star for direct measures.

No. 607.

R.A. $1^{h}\ 27^{m}\ 16^{s}$ }
Decl. $-8^{\circ}\ 7'{\cdot}8$ }